

Important Design Features in Different Web Site Domains

An Empirical Study of User Perceptions

Ping Zhang

Syracuse University

Gisela M. von Dran

Syracuse University

Paul Blake

Syracuse University

Veerapong Pipithsuksunt

Syracuse University

A short version of the paper was presented at and is in the proceedings of the Americas Conference on Information Systems (AMCIS), Long Beach, CA. August 2000.

ABSTRACT

This study uses an inductive thematic analysis approach to examine user perceptions on the importance of Web site design features in six different Web site domains: Financial, e-Commerce, Entertainment, Education, Government, and Medical. The five most important features, as well as the five most important families of features, were identified for each of the domains. The results indicate that (1) there are certain features that are perceived as equally important among different domains; (2) there are other features that are regarded as extremely important for one domain and extremely unimportant for another. The study provides empirical evidences for Web site designers and evaluators about what features are more important to focus on when dealing with Web site domains. It adds value to the current literature on consumer behavior in the electronic environment and web usability studies.

Keywords: *Web site design; Web usability; User perception; Web site domains; Thematic analysis*

INTRODUCTION

Understanding consumers' expectations and how they feel about the websites they use has recently become more important. Few current web usability studies are based on either theoretical frameworks or empirical evidence (Conger & Mason 1998; Small 1998; Spool et al. 1999; Wilkinson et al. 1997). Most studies provide some guidance for designers based mostly on heuristics or rules of thumb. These studies do not identify Web site design features that contribute to consumer satisfaction or dissatisfaction, address different quality expectations, nor do they provide any insight into whether some features are perceived as more important than others by the users.

Zhang, von Dran, Small, and Barcellos (1999, 2000), and Zhang and von Dran (2000) provide an emerging theoretical framework to distinguish between the Web site design features that satisfy users from those features that dissatisfy users. In their study, subjects were asked to classify certain features into satisfiers and dissatisfiers, which showed support for the framework. von Dran and Zhang (2000), and von Dran, Zhang, and Small (1999) approached the issue from another angle. They applied a marketing model to the web environment by focusing on users' different quality expectations. Again, the empirical data showed that the model can be used to distinguish the features that meet users' basic, performance, and exciting quality needs.

Both studies imply that the specific web domain or the purpose of a Web site impacts what users think about the features as satisfiers/dissatisfiers or how they meet different quality needs. On the other hand, the studies did not address user perceptions on whether some features are relatively more important than others.

This study extends the results of the above two studies. The objective of this study is to use a bottom up approach to examine user perceptions on the relative importance of features in different domains. The results of the study show that (1) the importance of features or families of features is dependent on the particular domain a user is working with; (2) certain features or families of features are extremely important for one domain and extremely unimportant for others; (3) there are certain features or families of features that are equally important among different domains. The current study provides designers with empirical data of how to focus on the most important features when the designers face design capacity limitations.

RESEARCH METHOD

Few existing studies provide either theoretical frameworks or heuristics of examining the relative importance among Web site design features. Thus, we decided to use an inductive (data driven) thematic analysis approach (Boyatzis, 1998) in this study. This

Important Design Features in Different Web Site Domains

approach starts on the collected data from a questionnaire. Independent raters develop the initial themes or codes by extracting meaningful words or phrases from a subset of users' answers. An iterative process refines and validates a code schema, which is used to code all of the answers. Similar codes are then clustered into families of codes for a higher abstract level of analysis. The rest of this section explains the method in detail.

Data Collection

Six domains of Web sites were chosen for the study. They were:

- Financial Information Web sites (such as CNNfn.com, quote.yahoo.com)
- E-Commerce Web sites (such as Amazon.com, e-Bay.com)
- Entertainment Web sites (such as a cartoon or a game Web site)
- Educational Web sites (such as National Geographic or a university's Web site)
- Governmental Web sites (such as US Department of Labor, and the White House Web site), and
- Health or Medical Information Web sites.

In a survey, subjects were asked to list, in priority order, the five most important Web site features to them for each of the six different Web site domains. Participants were 67 graduate students at a northeast university majoring in Business and Information Studies. Among the subjects, 32% were male and 68% female. The average age was 33 (with a standard deviation of 8). These subjects had an average of 4.6 years (std. is 2.2) using the Web. They spent an average of 12.6 hours (std. is 9.2) on the Internet per week. Subjects were paid \$10 upon their completion of the survey. Three of the subjects did not understand the requirement and provided unusable answers, and these sets of data were dropped during the analysis. Table 1 shows the example answers from a subject Subject_1.

Table 1. Answers by Subject_1.

1. Financial	2. E-commerce	3. Entertainment	4. Educational	5. Governmental	6. Health or medical
current information (i.e., recent updates), variety of different markets, readily available detailed information, other links, graphs and other supporting historic data	don't really utilize e-commerce Web sites	multi-media, interaction, displays, sharp images, graphics, quick download time (if applicable), links	navigation to find appropriate material, good searches (advanced features), downloadable publications, so you don't have to view online (pdf files), links, references	organization, table of contents, current information, easy access to current regulations, good searches, downloadable regulations	references to medical associations, current information, searches, different points of interest, accessibility

Coding in Thematic Analysis

Thematic analysis (Boyatzis, 1998) was conducted on subjects' answers to the questions. In this data-driven approach, two independent raters worked directly from the raw answers to extract words and phrases, which were used to generate the codes. This close relation between the codes and the raw answers helped to improve the coding consistency between the raters. The codes are measured by the magnitude of the appearance (that is, frequency). The software used for the coding was ATLAS.ti, version WIN 4.2.

The procedure of developing and validating the codes is summarized in Table 2 and explained below. It is by no means a linear process; rather there are several iterations among the stages. The pretest and the scaling stages of the initial code schema concluded the training process for the two raters. All major stages had inter-rater reliability measures. Because the purpose of introducing codes is to have a comparative analysis of the frequencies of responses as features, starting from now on, we use codes and features in an equivalent way.

Table 2: Coding Process with Inter-Rater Reliability Measures

Coding Stages		Domains	Inter-Rater Reliability Before Consensus		Inter-Rater Reliability After Consensus w/ Third Rater		
			#_judgments agreed/total_# judgments	%	#_judgments agreed/total_# judgments	%	#_codes
Developing an initial code schema	pre-test1	Finance Info. (partial)	84/87	96.6	84/84	100	
	pre-test2	Finance Info	262/268	97.8	262/262	100	245
Scaling of the initial code schema		Finance Info.					118
Applying of the code schema to other domains		E-commerce	196/299	65.6	297/299	99.3	
		Entertainment	166/242	68.6	241/242	99.6	
		Education	183/286	64.0	283/286	99.0	
		Government	162/241	67.2	238/241	99.6	
		Medical Info.	179/252	71.0	251/252	99.6	
							308
Clustering	pre-test1	Finance Info.	80/82	97.6	82/82	100	
	pre-test2	Finance Info.	44/49	90.0	49/49	100	
Applying full scope clustering		All domains	280/309	90.6	303/308	98.4	
Overall scaling & clustering		All domains					288

*For codes, a judgement was an assignment of a code for a quotation. For families, a judgement was an assignment of a super code to a family.

Developing an Initial Code Schema A two-stage pretest was conducted to develop the initial code schema using the answers in the financial domain. The focus of the first stage pretest was to determine the unit of analysis and the unit of coding. This was conducted by using part of the financial domain questions (randomly selected twenty-two subjects' data). The unit of the analysis (defined as a quotation in ATLAS.ti) was regarded as the whole answer a subject had for one domain. The unit of coding (a code in ATLAS.ti) was the particular features that subjects listed in their answers. The codes were developed using the original words and phrases in the quotations. Most responses in the survey are manifest, however, some are latent, which were interpreted by the raters (Boyatzis 98, p16). A consensus meeting with a third rater resolved the disagreements between the two independent raters. This included establishing rules of how to break quotations into meaningful units of coding while keeping the priority ranking provided by the users in the codes. Thus, for Subject_1's answer for the entertainment domain (which is a quotation, see Table 1), five codes were developed with the priority embedded in the codes: (1) multi-media 1, (2) interaction 2, (3) display/images/graphics 3, (4) quick download time 4, and (5) links 5.

In this paper, a super code is defined as a term with distinctive meaning; and a code is a super code with a suffix indicating the priority. For example, "customization" is a super code and may include five codes: customization 1, customization 2, customization 3, customization 4, and customization 5. It is thus possible that in a particular domain, only one or two codes were used from a super code.

The second stage of the pretest was concerned with the expansion of the super codes and the applications of the codes to the quotations. The raw answers for the entire financial domain were used for this stage. The formula used for determining the inter-rater reliability was:

$$(\text{Total Number Of Judgements Both Agreed}) / (\text{Total Number Of Possible Judgments})$$

The inter-rater reliability for this stage was 97.8% before the consensus meeting with the third rater and reached 100% after. The initial code schema had a total of 262 judgments and 245 codes, as shown in Table 2.

Scaling of the Initial Code Schema Before the code schema was applied to other domains, the super codes were scaled (Boyatzis 98, p134) into a more manageable list. This included the consolidation of similar super codes as a new super code with a higher level of abstraction. For example, after the scaling, the codes for Subject_1's quotation for the entertainment domain became (1) multimedia 1, (2) interactivity 2, (3) visual design 3, (4) site responsiveness 4, and (5) links to info 5. The result of the scaling was a new code schema of 118 codes.

Application of the Code Schema to Other Domains When the two raters coded the remaining

domains, the original words or phrases from the subjects were either identified as belonging to an existing super code or a new super code. Consensus meetings were conducted for coding results of each of the domains and the inter-rater reliability scores were both before and after the meetings. Refer to Table 2 for the reliability scores.

Clustering Similar Codes Into Families Clustering is defined as “. . . the organization of multiple themes into groups” (Boyatzis, 1998, p134). The clustering of the super codes revolved around the creation of families and placement of super codes within those families. For example, the family of “Navigation” included codes like “easy to navigate,” “navigation aids,” and “clear layout of info,” to name a few. The clustering was based on the code schema and not on any previous theories, so these families more accurately reflect the respondent’s answers.

In the study, clustering was done during the two pretests (using only the financial domain) and during one full scope (using all the domains). Pretest 1 of clustering was completed after the coding of the financial domain’s pretest. The clustering followed an iterative process where the two raters and the third “judge” rater developed families and definitions for the families. The two raters then placed the super codes into the families on their own, with a relatively high inter-rater reliability (97.6%, see Table 2). A consensus meeting was held and the super codes in dispute were placed in the appropriate families, yielding an inter-rater reliability of 100%.

Pretest 2 of clustering occurred immediately after the scaling of the initial code schema for the financial domain. Again, the two raters independently placed the codes into the families (using the existing families from pretest 1) and a consensus meeting was held with the third “judge” rater. See Table 2 for reliability measures.

The full scope clustering occurred when a complete list of super codes existed for all the domains. One of the iterative steps in the clustering process was the refining of the family definitions. See Table 2 for the inter-rater reliability measures.

Overall Scaling and Clustering As an iterative process, scaling was conducted again once all domains were coded. This scaling task is coupled with the refinement of families. Several super codes with single responses (one response for the entire super code) were compressed with other super codes. Similarly, family memberships were adjusted in order to eliminate families with only one super code and to reflect stronger semantic coupling among super codes. During this process, all three raters were present, and, as a result, inter-rater reliability scores are not applicable here.

DATA ANALYSIS AND RESULTS

Some subjects mentioned that they did not use or never used Web sites in certain domains (see Subject_1 in e-commerce domain in Table 1). Thus, they could not and/

Important Design Features in Different Web Site Domains

or did not provide any opinions on which features were most important. For those participants who provided their perceptions on some or all domains, the analysis was conducted at two levels: code and the cluster (or family as noted in ATLAS.ti) of codes. Table 7 in the Appendix lists all of the 77 super codes and the frequencies across all the domains. Sometimes designers or evaluators of Web sites need to focus on a small number of factors that affect user perceptions of Web sites. Thus, it may be helpful to group features into a higher level of abstract units, namely clusters or families of features. These families may provide a better overview of the characteristics of Web site features. Since subjects were able to give a list of features with priority (order of importance), we used this information in our analysis in the form of weighted frequencies at both the code and family levels.

List of Super Codes across Domains

Table 3 summarizes the total numbers of super codes, the total numbers of super codes uniquely used by some domains, and the total numbers of responses from the subjects for each domain. From the table, we can see that:

1. Even though the total number of responses is low in the Medical Domain, the total number of super codes in the Medical Domain is the highest.
2. The Entertainment Domain has the highest number of unique super codes (6 codes), and, two-thirds of them are concerned with engaging users cognitively or emotionally.
3. The E-commerce and Education domains have a higher number of responses than the average. This may imply that most subjects are more familiar with E-commerce and Education Web sites than with others (in our survey, three people commented “Do not use / never use” in the E-commerce and two in the Education domains, while the rest domains have more than eight “Do no use”).

Table 3. Number of super codes and responses

Domain	#_Super Codes	#_Super Codes Unique for a Domain	Code ID	Total Responses
Financial	49	1	56	262
E-commerce	47	3	25, 54, 72	299
Entertainment	42	6	28, 33, 61, 71, 73, 74	241
Education	52	1	42	286
Government	38	0		245
Medical	53	1	30	254
All	77			1587

Weighted Rank of the Most Important Features for Different Domains

For each code in each domain, the weighted score is determined by the frequency of the code in the domain multiplied by the weight for the priority that was assigned by the subjects. That is:

$$\text{Score} = \text{PriorityWeight} * \text{Frequency},$$

while PriorityWeight is designed as: First priority (most important) has a weight of 5, Second (second most important) 4, third 3, fourth 2, and fifth 1.

Table 4 lists the five most important features for each of the six domains based on the weighted frequencies. The following are some observations from the table.

1. The Financial domain has high requirements on the nature of the information, such as *up to date*, *accuracy*, *multiple sources*, and *timeliness*.
2. *Easy to navigate* is also very important as ranked as number 4 for the financial domain. For all other domains, however, *easy to navigate* is highly ranked as either number one or two. Thus, it is a must-have feature for all six domains.
3. *Up-to-date info* is very important for the financial domain, and is true for the government, medical and entertainment domains. The feature, however, is not listed within the five most important features for the education and e-commerce domains.
4. The Entertainment domain has high demand on *visual design*, *multimedia* and *site responsiveness*, which are not in the list of any of the other five domains.
5. *Search tool* is commonly ranked by four domains as important: education, government, medical, and e-commerce.
6. The Education and medical domains require *comprehensiveness of information*, which is not ranked within the five-most important list of the other four domains at all.
7. *Accuracy of information* is most important for the medical domain, somewhat important for the financial, education and government domains, but is not within the five-most for the e-commerce and the entertainment domains.
8. *Security of data* is ranked number one in e-commerce domain but is not in any other domains at all.

The Weighted Rank of the Five Most Important Families for Each Domain

There is a total of 15 families/clusters of features, as listed in Table 8 in the Appendix. The last one is for the responses of “Do not use / never used the domain” and is disregarded from the analysis. The weighted score of a family is calculated by using the weighed scores of the super codes belonging to the family. Table 5 lists the five most important families for each of the six domains. Table 5 shows that:

Important Design Features in Different Web Site Domains

Table 4. Five most important features

Order	Fin	Score	Edu	Score	Gov	Score
1	Up-to-date info.	92	Easy to navigate	107	Easy to navigate	100
2	Accuracy of info.	81	Search tool	85	Clear layout of info.	77
3	Multiple information sources	76	Accuracy of info.	72	Up-to-date info.	66
4	Easy to navigate	52	Comprehensiveness of info.	55	Search tool	64
5	Timely info.	32	Clear layout of info.	54	Accuracy of info.	62

Order	E-C	Score	Med	Score	Ent	Score
1	Security of data	121	Accuracy of info.	87	Visual design	172
2	Easy to navigate	97	Easy to navigate	60	Easy to navigate	70
3	Appropriate explanatory text	59	Search tool	53	Site responsiveness	68
4	Search tool	45	Up-to-date info.	53	Multimedia	58
5	Product and service price concerns	44	Comprehensiveness of info.	52	Up-to-date info.	50

1. *Navigation* is ranked among the top three most important families in all domains.
2. *Completeness/Comprehensiveness of Info* is among the top two most important families in all but the E-commerce and Entertainment domains.
3. *Site Technical Features* (most responses are from Search Tool feature) is ranked from the 3rd to the 5th family in all but Financial and Entertainment. This implies that users take whatever is available on the first page/immediate access on Web sites of these domains. They don't expect to search in these Web sites.
4. *Currency/Timeliness/Update* is among the top three for the Financial, Medical and Government domains.
5. *Accuracy* is listed as the 4th or 5th family for the Financial, Medical and Government domains.
6. *Readability/Comprehension/Clarity* is ranked as 4th or 5th for the Financial, Education, and E-Commerce domains.

Table 5. The most important families

Order	Fin	Score	Edu	Score	Gov	Score
1	Currency/Timeliness/Update	173	Navigation	186	Navigation	193
2	Completeness/Comprehensiveness of Info	129	Completeness/Comprehensiveness of Info	142	Completeness/Comprehensiveness of Info	114
3	Navigation	93	Site Technical Features	98	Currency/Timeliness/Update	96
4	Accuracy	81	Info Reliability/Reputation	79	Site Technical Features	76
5	Readability/Comprehension/Clarity	54	Readability/Comprehension/Clarity	78	Accuracy	62

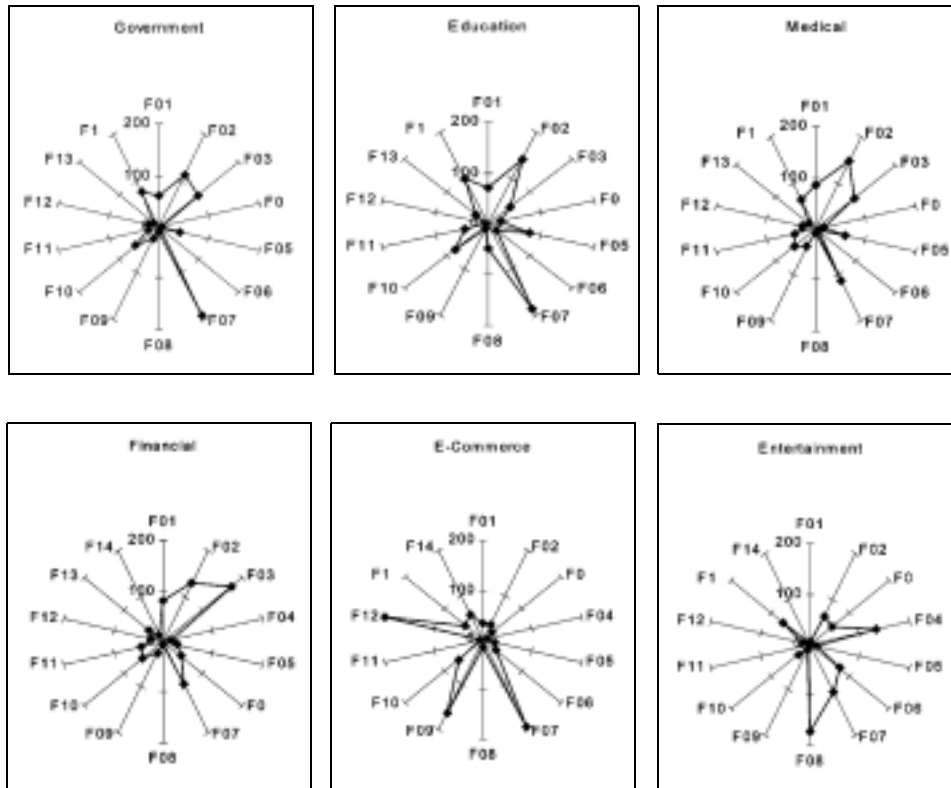
Order	E-C	Score	Med	Score	Ent	Score
1	Security/Privacy	201	Completeness/Comprehensiveness of Info	149	Visual Design	172
2	Navigation	196	Navigation	111	Engaging	132
3	Product and Service Concerns	162	Currency/Timeliness/Update	97	Navigation	105
4	Readability/Comprehension/Clarity	64	Accuracy	87	Info Representation	74
5	Site Technical Features	56	Site Technical Features	64	Site Accessibility/Responsiveness	68

Table 5 also indicates there are three domains that require unique families. For example, Education domain requires *Info Reliability/Reputation*; E-Commerce demands *Security/Privacy* and *Product and Service Concerns*; while Entertainment requires four unique families: *Visual Design*, *Engaging*, *Info Representation*, and *Site Accessibility/Responsiveness*.

Figure 1 depicts the similarities and/or differences among the domains in terms of the composition of the most important families. Some domains share the common families. Figure 1 confirms some of the observations from Table 5. Specifically, Figure 1 shows that:

1. The Government, Education and Medical domains have similar “patterns” of the most important families. For example, they all have high F02 and F07 and low F04, F06, F09, F12, and F13 (see Table 8 of Appendix for family IDs). This means that designers can focus on some concerns that these domains have in common.
2. Financial, E-Commerce and Entertainment do not seem similar to any other domains, or to each other. This implies that these domains should be designed differently from other domains for the particular reasons users come to the sites.

Figure 1. The importance of families for six domains: similarity and differences among domains



DISCUSSION AND LIMITATIONS

The limitations of this study include its small sample size, the relative web expertise of the participants and its reliance of perceptual recall of subjects. For these reasons, no definite conclusions can be drawn until the study is replicated with a larger sample, more heterogeneous as well as expert participants and over a period of time. Nevertheless, the analyses of codes and the families of codes show some interesting facts about users' perceptions on importance of Web site features and families of features.

1. The importance of features or families of features is dependent on the particular domain a user is working with.
2. Certain features or families of features are extremely important for one domain and extremely unimportant for others. For example, Engaging is the 2nd most important for Entertainment, but almost the least important for the other five domains; Security/Privacy is the most important family for E-Commerce domain but is listed not important in the rest of the domains.

3. There are certain features or families of features that are equally important among different domains. For example, Navigation is among the top important families of all the domains.

The findings provide practical suggestions to at least three types of people. For Web site designers, the study implies that different domains should be designed with different foci of important features. For Web site owners or corporate strategists of E-C Web sites, the study indicates that users regard the Web site design and company products/services as one unit. For independent Web site evaluators/critics, this study recommends that different domains may require different sets of evaluating criteria/tools.

References

- Boyatzis, R. E. *Transforming Qualitative Information: Thematic Analysis and Code Development*. Thousand Oaks, CA: Sage Publications, 1998.
- Conger, S.A., and Mason, R.O. *Planning and Designing Effective Web Sites*. Cambridge, MA: Course Technology, 1998.
- Small, R.V. *Assessing the Motivational Quality of Worldwide Websites*, (ED 407 930). Syracuse, NY: ERIC Clearinghouse on Information and Technology, 1998.
- Spool, J., Scanlon, T., Schroeder, W., Snyder, C. and DeAngelo, T., *Web Site Usability—A Designer's Guide*. San Francisco, California: Morgan Kaufmann Publishers, Inc., 1999.
- von Dran, G., and Zhang, P. "A Model for Assessing the Quality of Websites," *Proceedings of Annual Conference, American Association for Information Science (ASIS'2000)*, Chicago, November 13–16, 2000.
- von Dran, G., Zhang, P. and Small, R. "Quality Websites: An Application of the Kano Model to Website Design," *Proceedings of the 5th Americas Conference in Information Systems (AMCIS'99)*, August 13–15, 1999.
- Wilkinson, G. L., Bennett, L.T., and Oliver, K.M. "Evaluation Criteria and Indicators of Quality for Internet Resources," *Educational Technology*, May–June 1997, pp. 52–59.
- Zhang, P., and von Dran, G., "Satisfiers and Dissatisfiers: a Two-Factor Model for Website Design and Evaluation," *Journal of American Association for Information Science (JASIS)*, Volume 51, Issue 14, 2000, pp. 1253–1268.
- Zhang, P., von Dran, G., Small, R., and Barcellos, S. "A Two-Factor Theory for Website Design," *Proceedings of the Hawaii International Conference on Systems Science (HICSS 33)*, Hawaii, January 2–6, 2000.
- Zhang, P., von Dran, G., Small, R., and Barcellos, S., "Websites that Satisfy Users: A Theoretic Framework for Web User Interface Design and Evaluation," *Proceedings of the Hawaii International Conference on Systems Science (HICSS 32)*, Hawaii, January 5–8, 1999.

Appendix

Table 7. List of super codes and frequency counts across domains

ID	CODES	FIN	E-C	ENT	EDU	GOV	MED	Totals
1	Accuracy of info.	19	11	2	19	14	21	86
2	Added value services	0	0	0	1	0	1	2
3	Advertising/Lack of advertising	0	2	1	1	0	2	6
4	Appropriate explanatory text	7	18	9	13	14	6	67
5	Appropriate level of content	0	0	0	3	0	4	7
6	Attractive layout	0	0	5	1	0	1	7
7	Authoritative info.	2	0	0	2	4	1	9
8	Availability of product and service needed	1	8	1	0	0	0	10
9	Availability of site owner info.	0	0	0	1	1	3	5
10	Chat room	1	0	0	0	0	1	2
11	Clarity of site map	1	0	1	3	3	1	9
12	Clear layout of info.	8	16	7	16	20	9	76
13	Cognitive advancement	0	0	1	2	0	2	5
14	Comprehensiveness of info.	6	4	3	19	18	15	65
15	Comprehensiveness of site products	1	9	0	0	0	0	10
16	Confidentiality of user info.	2	4	1	0	0	4	11
17	Consistent layout of info.	2	1	1	1	1	1	7
18	Content related analysis, predictions, advice, or suggestions	12	0	0	2	0	2	16
19	Currency of info.	7	0	0	3	7	9	26
20	Customer reviews, responses and input	0	3	0	1	2	0	6
21	Customer service	1	16	0	2	6	6	31
22	Customization of info	10	3	2	3	0	0	18
23	Customization of site	1	4	0	0	0	1	6
24	Ease of info. access	3	4	1	3	2	2	15
25	Ease of ordering	0	13	0	0	0	0	13
26	Easy to navigate	17	30	21	32	27	21	148
27	Easy to read info.	4	0	1	4	3	1	13
28	Easy to remember address	0	0	1	0	0	0	1
29	Easy to understand info.	4	1	1	1	3	2	12
30	Emotional support	0	0	0	0	0	1	1
31	Exciting content	0	0	0	2	0	0	2
32	Full text info	0	0	0	2	0	1	3
33	Fun	0	0	8	0	0	0	8
34	Humor	1	1	8	2	0	0	12
35	Info accessibility	1	1	1	2	2	0	7
36	Info stability	2	0	0	1	1	1	5
37	Info. displayed in different formats	5	7	0	2	0	2	16

Table 7. List of super codes and frequency counts across domains (*continued*)

ID	CODES	FIN	E-C	ENT	EDU	GOV	MED	Totals
38	Informative	0	0	0	1	1	1	3
39	Interactivity	4	2	14	3	2	3	28
40	Interesting content	0	0	1	3	0	0	4
41	Intuitive interface	0	1	1	0	0	1	3
42	Legible	0	0	0	1	0	0	1
43	Links to info.	13	2	15	22	19	17	88
44	Multimedia	1	1	15	3	1	1	22
45	Multiple information sources	28	5	5	2	2	8	50
46	No broken links	0	0	0	1	1	0	2
47	Objective info.	1	0	0	2	0	1	4
48	Printable/downloadable	0	0	1	6	5	3	15
49	Privacy	0	1	1	0	1	3	6
50	Product and service description	2	4	1	0	0	0	7
51	Product and service price concerns	3	15	1	0	2	3	24
52	Provide info. sources	4	2	0	7	2	7	22
53	Quality of info.	1	0	4	7	4	3	19
54	Quality of product	0	2	0	0	0	0	2
55	Readability	2	0	0	1	0	5	8
56	Real time info.	6	0	0	0	0	0	6
57	Relevant info.	7	1	0	9	7	10	34
58	Reliability of info.	3	2	0	3	2	5	15
59	Reliability of site	1	2	0	0	0	0	3
60	Reputation of site or company	1	4	0	2	1	6	14
61	Rewarding experience	0	0	2	0	0	0	2
62	Search tool	4	15	1	23	18	17	78
63	Secured site	1	6	0	0	2	0	9
64	Security of data	3	29	1	0	3	1	37
65	Security of personal info.	1	6	1	0	0	1	9
66	Security required by site	0	1	0	1	0	0	2
67	Site always accessible	2	4	0	3	0	3	12
68	Site atmosphere	0	1	0	1	0	0	2
69	Site availability	3	1	0	0	0	2	6
70	Site responsiveness	6	12	21	7	4	3	53
71	Sound	0	0	5	0	0	0	5
72	Speed of product delivery	0	5	0	0	0	0	5
73	Surprising_does unexpected things	0	0	2	0	0	0	2
74	Tasteful entertainment	0	0	1	0	0	0	1
75	Timely info.	8	1	2	3	3	3	20
76	Up-to-date info.	25	9	14	12	22	15	97
77	Visual design	2	6	46	17	3	3	77

Important Design Features in Different Web Site Domains

Table 8. List of families of super codes and frequency counts across domains

FID	Family	Definition	FIN	E-C	ENT	EDU	GOV	MED	Totals
F01	Accuracy	No errors, correct, exact, precise, right, true	19	11	2	19	14	21	86
F02	Completeness/ Comprehensive- ness of Info	Large in scope or content, containing a variety of information or sources	51	13	23	53	42	51	233
F03	Currency/ Timeliness/ Update	Information is current, up to the moment, real time, timely	46	10	16	18	32	27	149
F04	Engaging	Cognitive advancement, emotional connections, personal expressions	5	3	42	13	2	7	72
F05	Info Reliability/ Reputation	Info dependable, the condition of being held in high esteem, being authoritative, high reputation of info source	11	7	5	19	14	17	73
F06	Info Representation	The way information is presented, maybe in different format/media, customized displays	16	11	22	8	1	3	61
F07	Navigation	Features to make navigation possible, site maps	31	65	33	55	53	35	272
F08	Visual Design	Visual Appearance	2	7	46	19	3	3	80
F09	Product and Service Concerns	Features concerned with products/services offered/sold through the Web site, not about the site itself; price and availability of products/services	8	64	4	5	10	12	103
F10	Readability/ Comprehension/ Clarity	Ability to comprehend the meaning of written or printed words or symbols, to perceive or receive well	17	19	11	22	20	18	107
F11	Relevant Info	Information that directs to the point, having to do with the matter at hand	19	1	0	12	8	13	53
F12	Security/Privacy	Confidentiality of info, things that gives or assures safety and guarantee	7	47	4	1	6	9	74
F13	Site Accessibility/ Responsiveness	Being able to access the Web site; responsiveness of the site to user's request in terms of time.	12	19	21	10	4	8	74
F14	Site Technical Features	Features such as search tools, downloadable (printer friendliness), chat rooms.	6	19	2	30	24	22	103
F15	Do not Use/ never used		12	3	10	2	12	8	47
	Total Frequency		262	299	241	286	245	254	1587